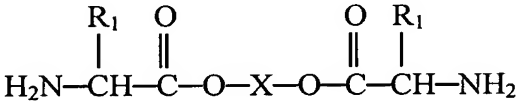
The Listing of Claims with Claim Amendments

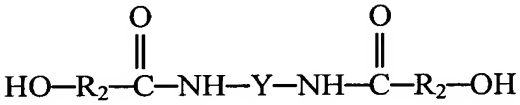
This listing of claims will replace all prior versions of the claims in this application:

1. (Original) A medical article comprising an implantable substrate having a coating, the coating including a polymeric product of a reaction between a first reagent, a second reagent, and a third reagent, wherein:

(a) the first reagent is selected from a group consisting of compounds having formulae (1), (2), (3), and (4):



(1)



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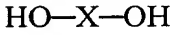

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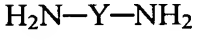
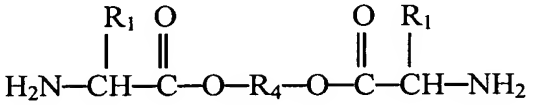


(4)

(b) the second reagent is selected from a group consisting of compounds having formulae (5), (6), (7), and (8):



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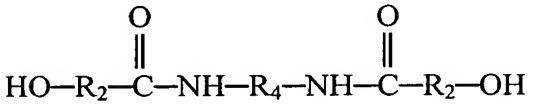

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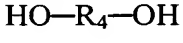

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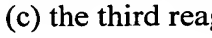
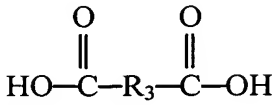


(8)

(c) the third reagent is a dicarboxylic acid having the formula (9):



(9)

wherein:

R_1 is hydrogen, methyl, *iso*-propyl, *sec*-butyl; *iso*-butyl, or benzyl group;

R_2 is methylene, methylmethylene, *n*-propylene, *iso*-propylene, ethylmethylene, *n*-butylene, *iso*-butylene, *sec*-butylene, or *n*-amylene group;

R_3 is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is an integer between 2 and 12;

R_4 is a moiety derived from a compound selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), random poly(ethylene glycol-co-propylene glycol), poly(ethylene glycol)-block-poly(propylene glycol), hyaluronic acid, poly(2-hydroxyethyl methacrylate), poly(3-hydroxypropylmethacrylamide), poly(styrene sulfonate), poly(vinyl pyrrolidone), and cellulosics;

X is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is an integer between 2 and 12; and

Y is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is 1, 2, or 5.

2. (Original) The medical article of Claim 1, wherein the implantable substrate is a stent.

3. (Currently Amended) The medical article of Claim 1, wherein the compound of formula (1) is a diol-diamine, and wherein the diol-diamine is a product of condensation of an amino acid and a diol.

4. (Original) The medical article of Claim 3, wherein the amino acid has the formula (10):

$H_2N—CHR_1—COOH.$ (10)

5. (Original) The medical article of Claim 3, wherein the amino acid is selected from a group consisting of glycine, alanine, valine, isoleucine, leucine, and phenyl alanine.

6. (Original) The medical article of Claim 3, wherein a diol is selected from a group consisting of ethylene glycol, 1,3-propanediol, 1,4-butane diol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, and 1,12-dodecanediol.

7. (Currently Amended) The medical article of Claim 1, wherein the compound of formula (2) is an amidediol, and wherein the amidediol is a product of condensation of a hydroxy acid and a diamine.

8. (Original) The medical article of Claim 7, wherein the hydroxy acid has the formula (11):

$HO—R_2—COOH.$ (11)

9. (Original) The medical article of Claim 7, wherein the hydroxy acid is selected from a group consisting of glycolic acid, lactic acid, β-hydroxybutyric acid, α-hydroxyvaleric acid, and ε–hydroxycaproic acid.

10. (Original) The medical article of Claim 7, wherein the diamine is selected from a group consisting of putrescine, 1,2-ethanediamine, and cadavarene.

11. (Original) The medical article of Claim 1, wherein the compound of formula (3) is selected from a group consisting of ethylene glycol, 1,3-propanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, and 1,12-dodecanediol.

12. (Original) The medical article of Claim 1, wherein the compound of formula (4) is selected from a group consisting of putrescine, 1,2-ethanediamine, and cadavarene.

13. (Original) The medical article of Claim 1, wherein the compound of formula (5) is a PEG-diester-diamine conjugate, the conjugate is a product of condensation of an amino acid and poly(ethylene glycol).

14. (Original) The medical article of Claim 13, wherein the amino acid has the formula (10):

$$H_2N—CHR_1—COOH. \quad (10)$$

15. (Original) The medical article of Claim 13, wherein the amino acid is selected from a group consisting of glycine, alanine, valine, isoleucine, leucine, phenyl alanine, tyrosine, serine, and glutamic acid.

16. (Original) The medical article of Claim 1, wherein the compound of formula (6) is a PEG-amidediol conjugate, the conjugate is a product of condensation of a hydroxy acid and PEG-diamine.

17. (Original) The medical article of Claim 16, wherein the hydroxy acid has the formula (11):

$$HO—R_2—COOH. \quad (11)$$

18. (Original) The medical article of Claim 17, wherein the hydroxy acid is selected from a group consisting of glycolic acid, lactic acid, β-hydroxybutyric acid, α-hydroxyvaleric acid, and ε–hydroxycaproic acid.

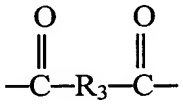
19. (Currently Amended) A medical article comprising an implantable substrate having a coating, wherein the coating ~~including~~ includes a copolymer having a general formula (12) or (13):

$$-[M-P]_m-[M-Q]_n- \quad (12)$$

$$-[M_1-P]_p- \quad (13)$$

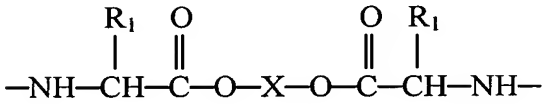
wherein:

M is a moiety represented by the structure having the formula (14)



(14)

P is a moiety selected from a group consisting of structures having the formulae (15), (16), (17), and (18):



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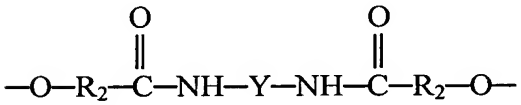
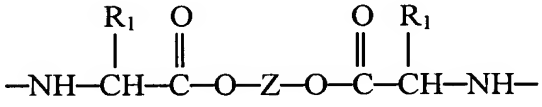


(16)

$$-O-X-O- \quad (17)$$

$$-NH-Y-NH- \quad (18)$$

Q is a moiety selected from a group consisting of structures having the formulae (19), (20), and (21)



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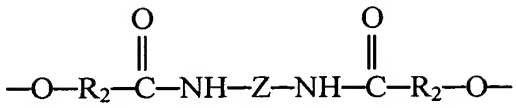
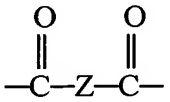


(20)

—O—Z—O—, and —NH—Z—NH— (21)

M_1 is a moiety represented by the structure having the formula (22):



(22)

R_1 is hydrogen, methyl, *iso*-propyl, *sec*-butyl; *iso*-butyl, or benzyl group;

R_2 is methylene, methylmethylene, *n*-propylene, *iso*-propylene, ethylmethylene, *n*-butylene, *iso*-butylene, *sec*-butylene, or *n*-amylene group;

R_3 is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is an integer between 2 and 12;

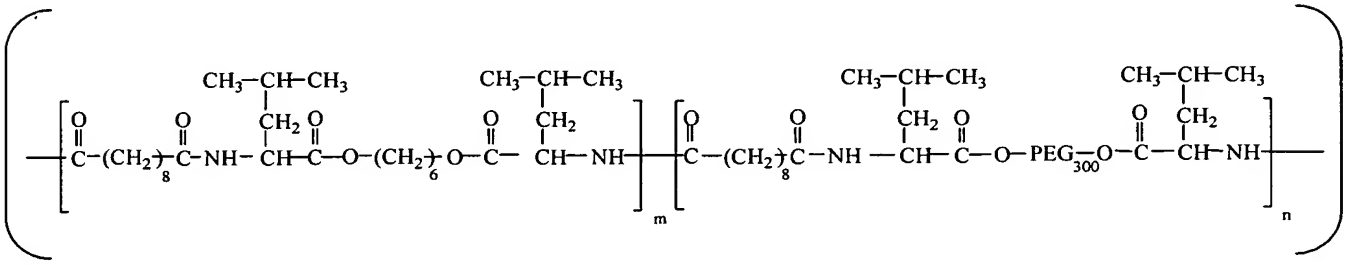
X is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is an integer between 2 and 12;

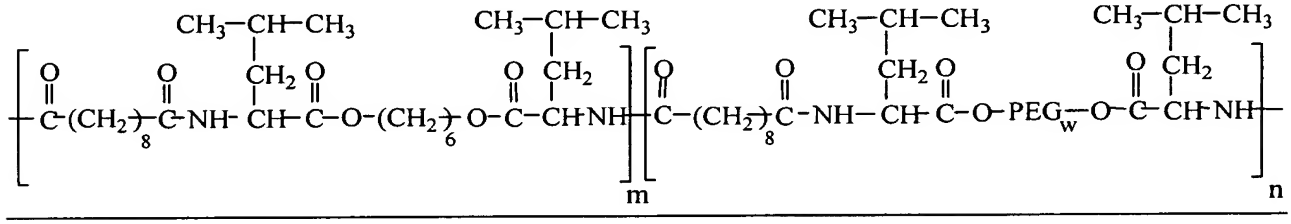
Y is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is 1, 2, or 5;

Z is a moiety derived from a compound selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), random poly(ethylene glycol-co-propylene glycol), poly(ethylene glycol)-block-poly(propylene glycol), hyaluronic acid, poly(2-hydroxyethyl methacrylate), poly(3-hydroxypropylmethacrylamide), poly(styrene sulfonate), poly(vinyl pyrrolidone, and cellulosics; and

m, n, and p are integers where the value of m is between 5 and 1,800, the value of n is between 1 and 800 and the value of p is between 4 and 1,500.

20. (Currently Amended) The medical article of Claim 19, wherein the polymer is selected from a group consisting of copolymers of formulae (23), (24), (25), (26), (27), (28), (29), (30), (31), (32), (33), (34), (35), (36), (37), (38), (39), (40), (41), (42), and (43):





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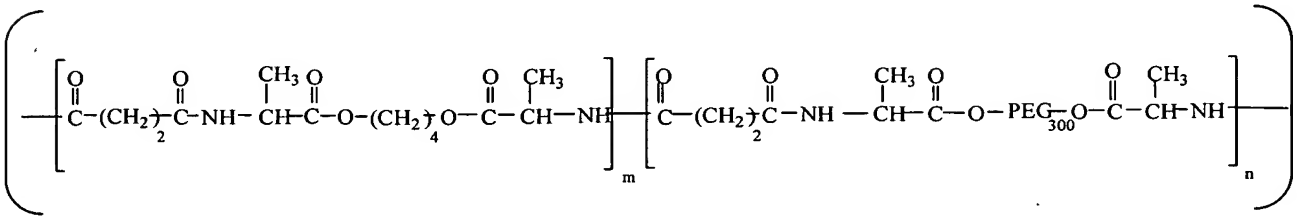

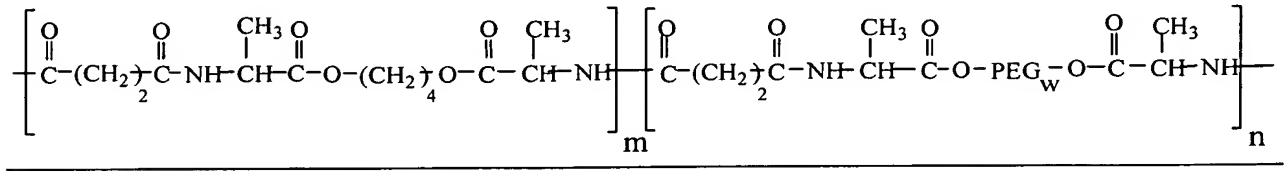

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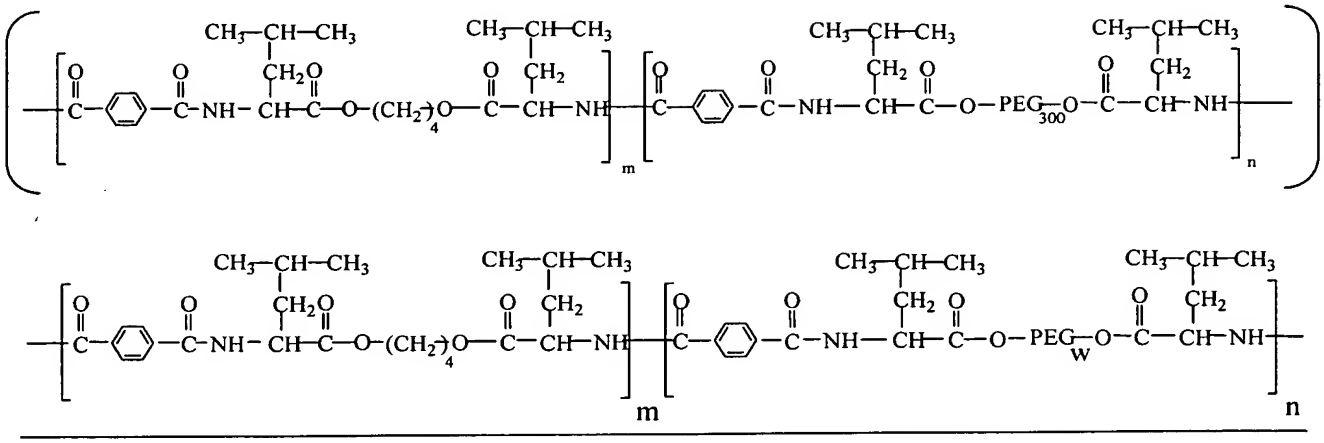

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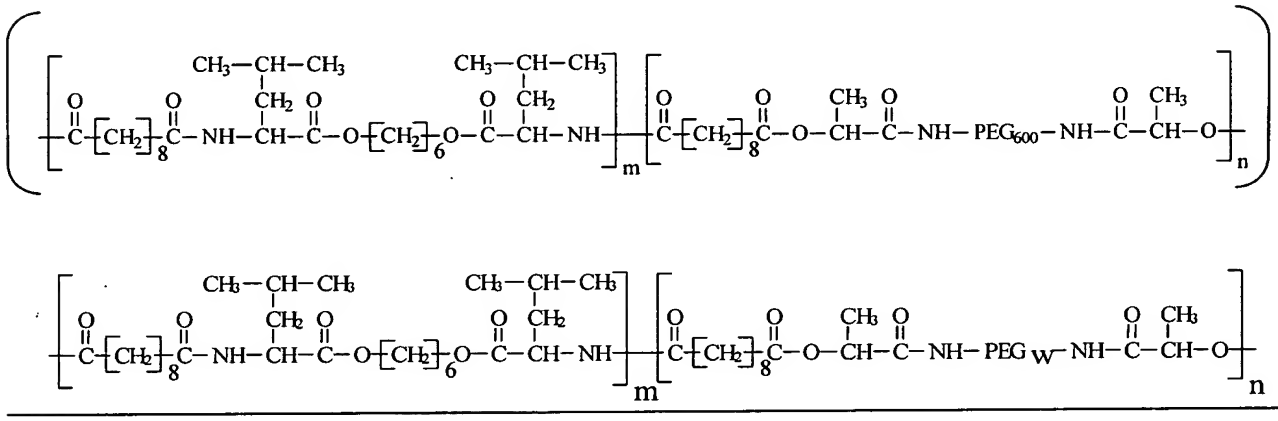

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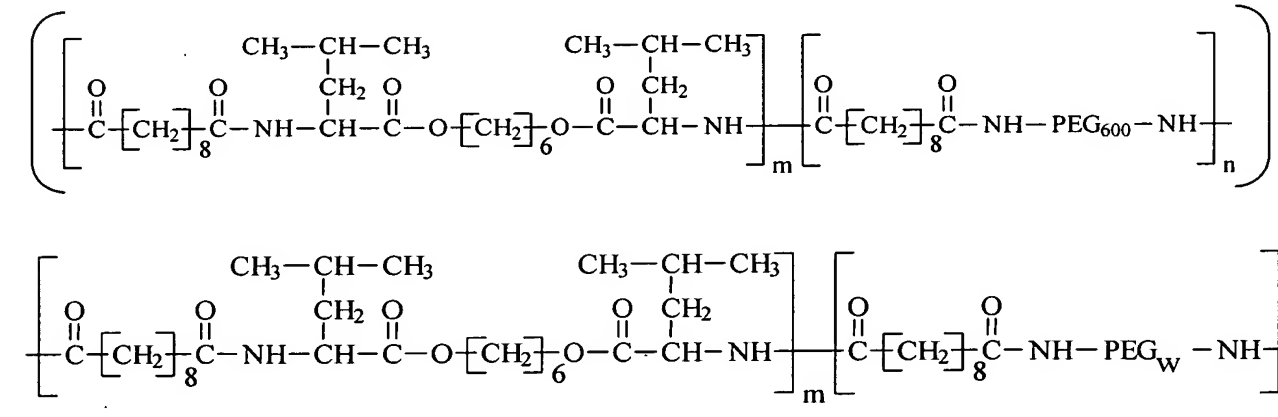

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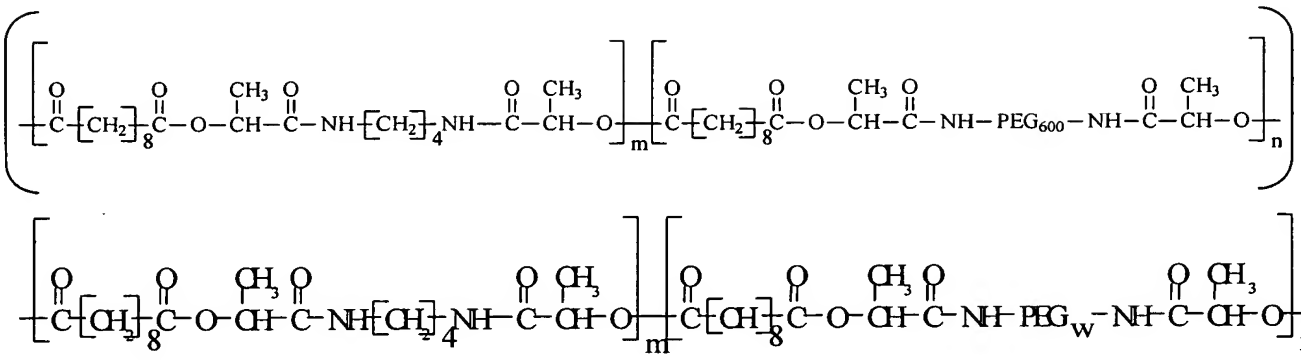

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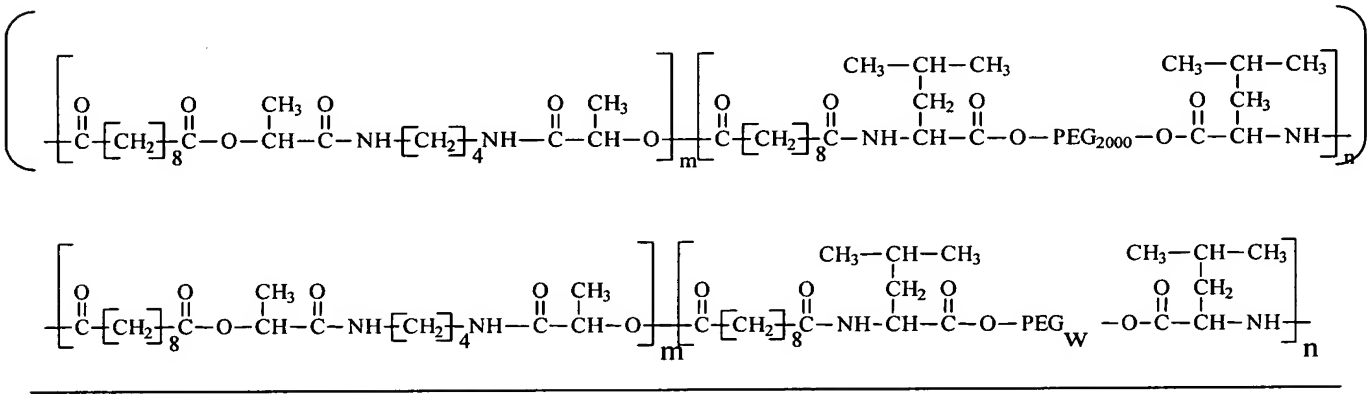

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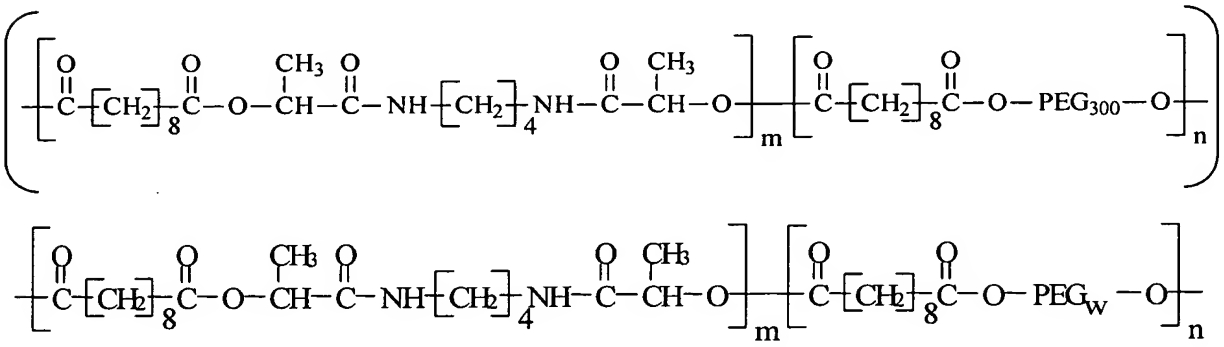

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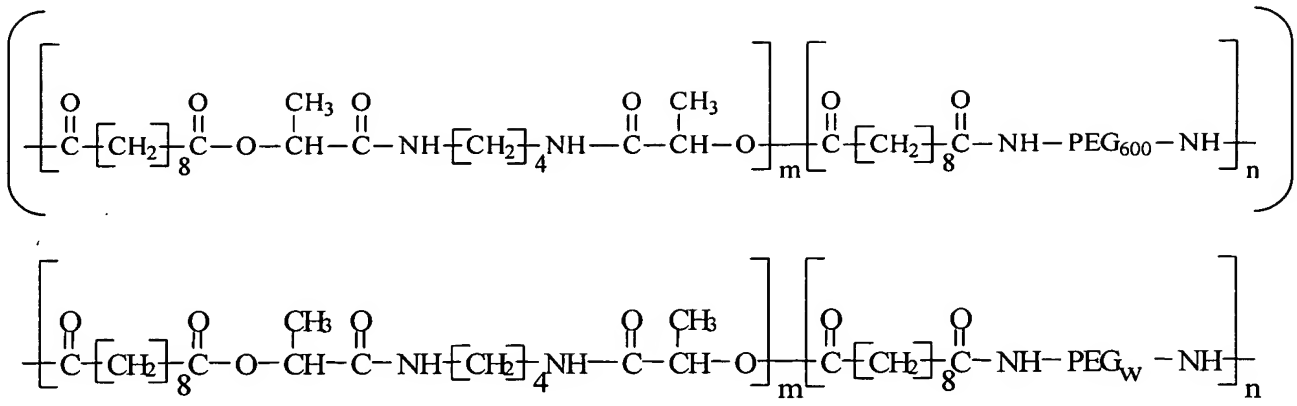

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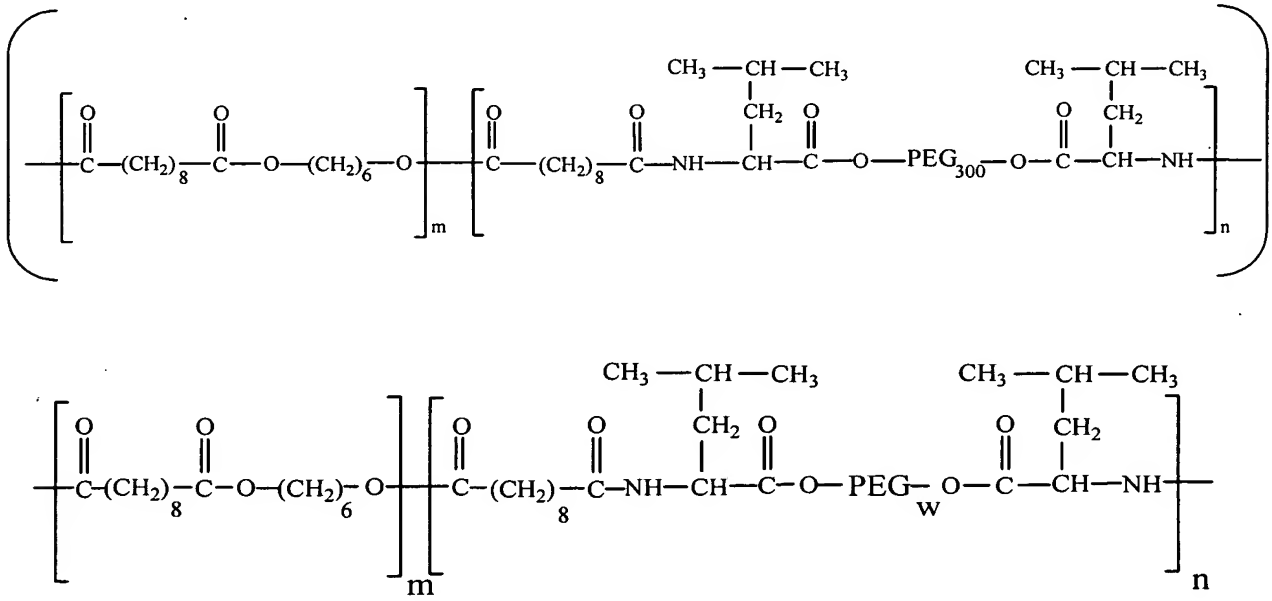

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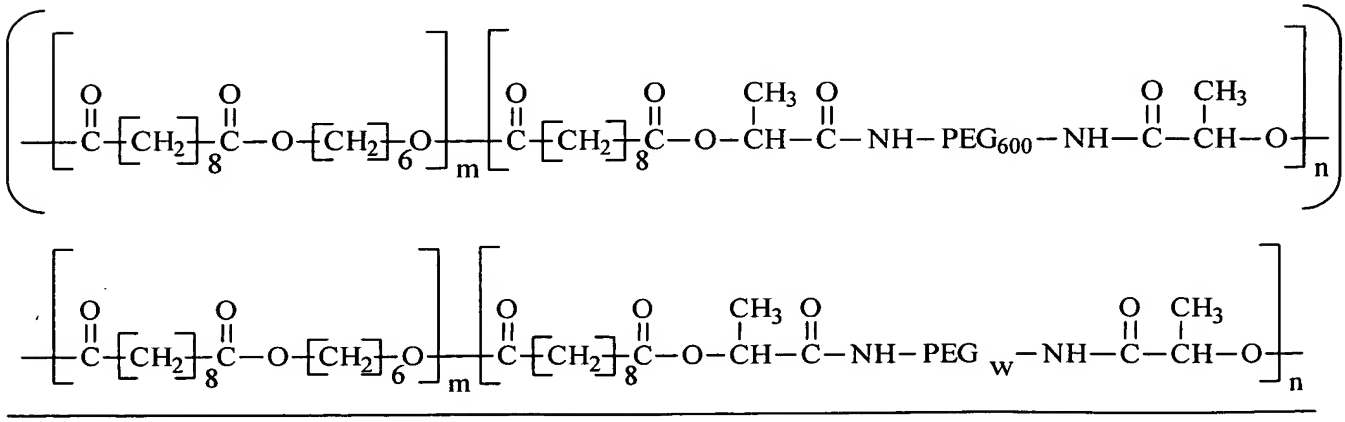

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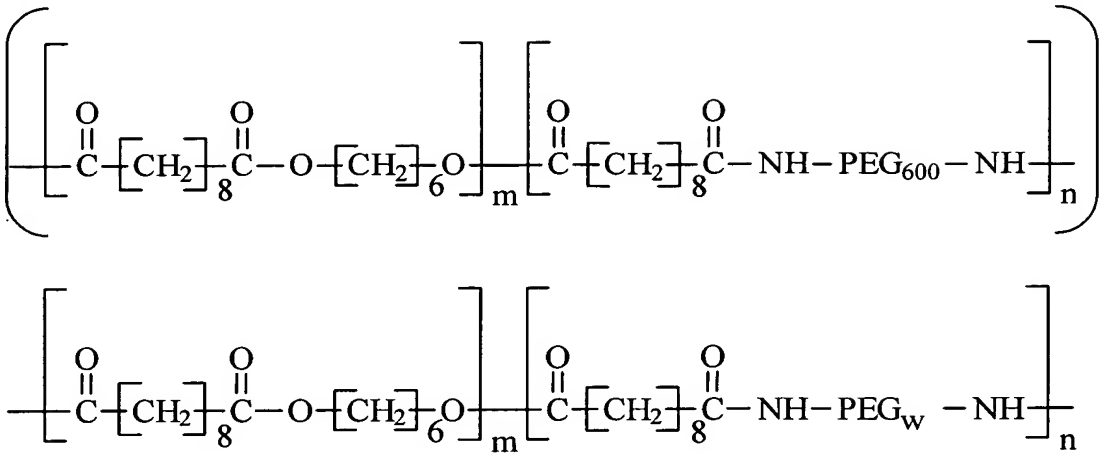

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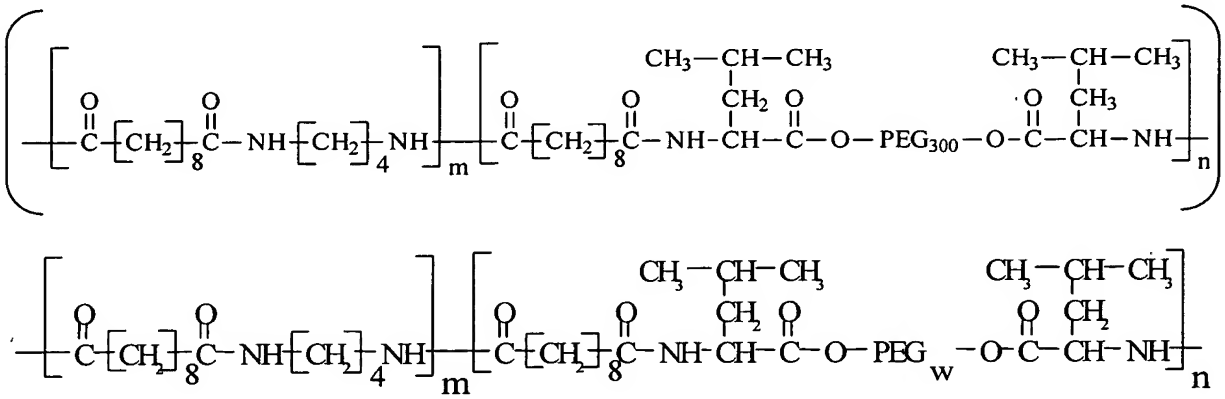

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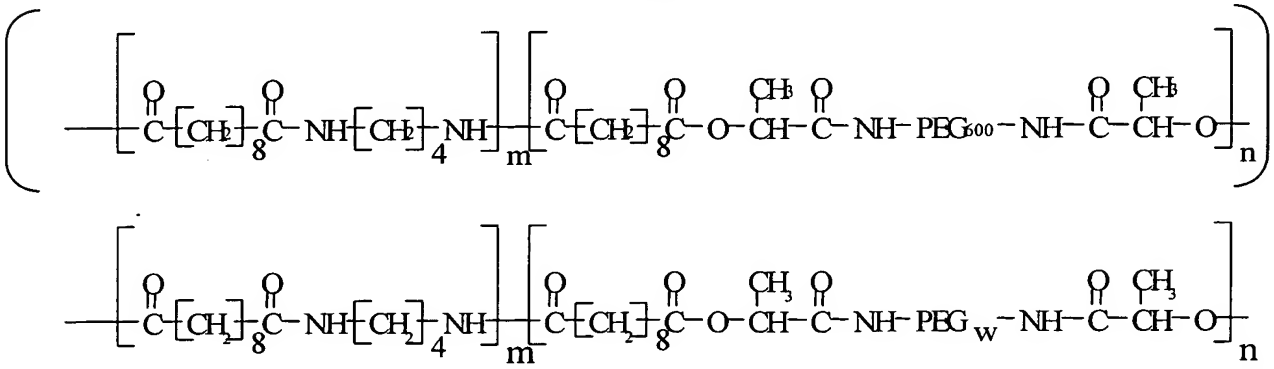

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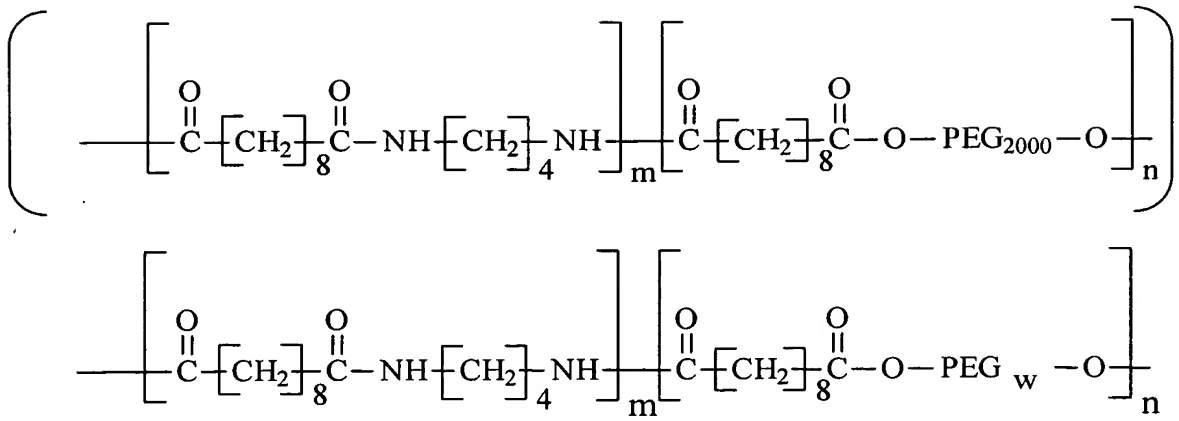

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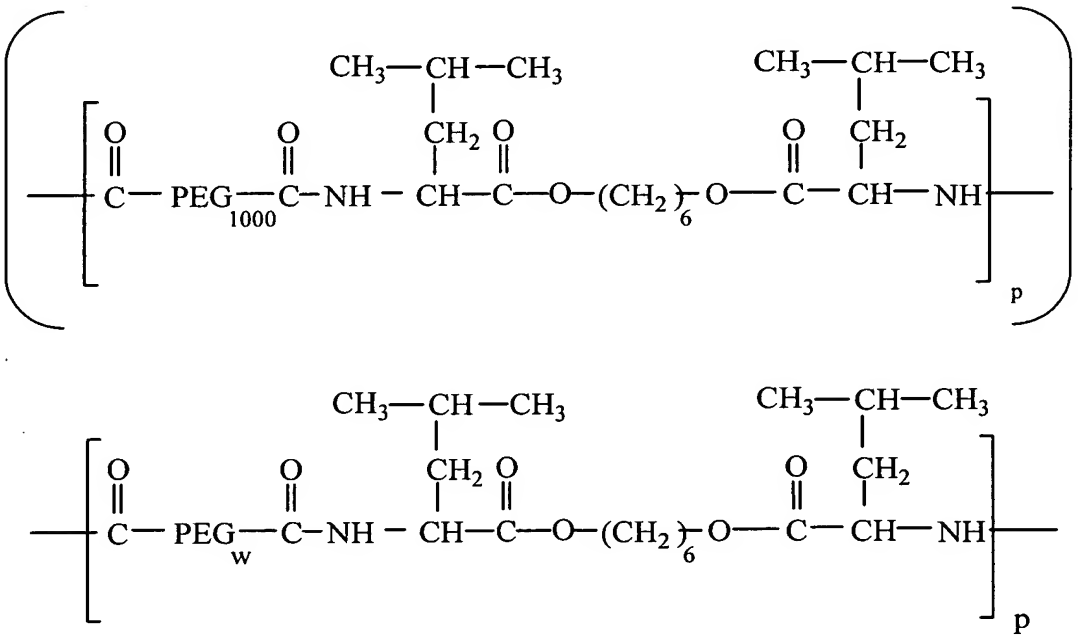

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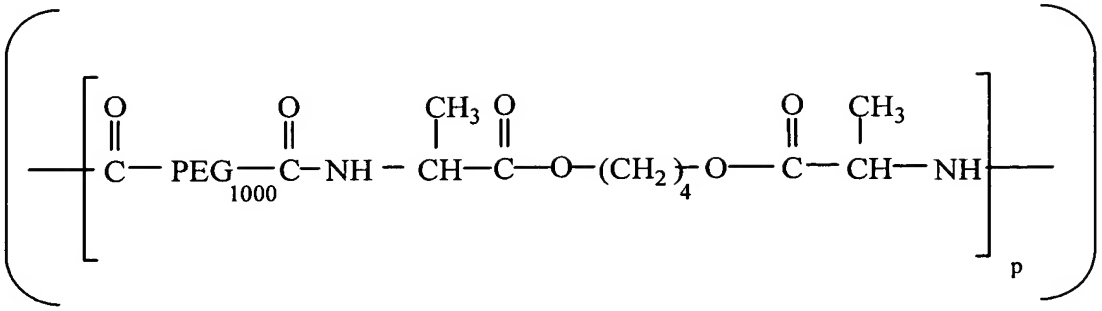

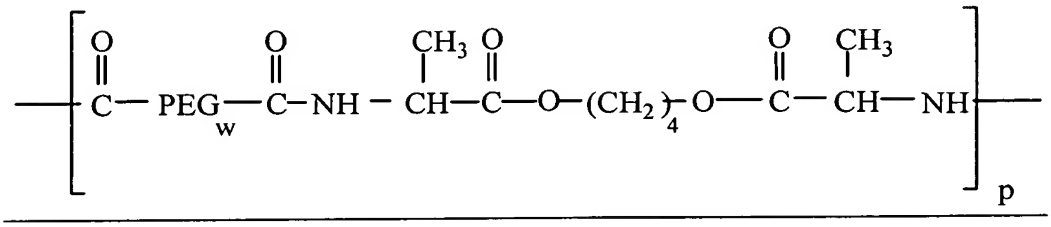

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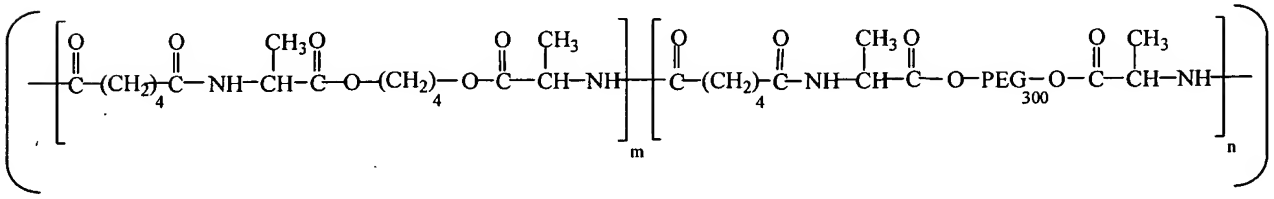

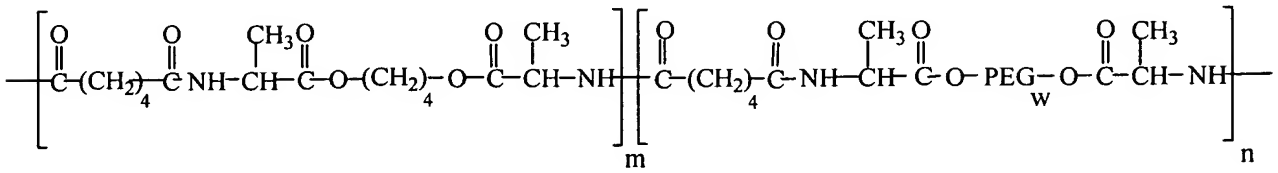

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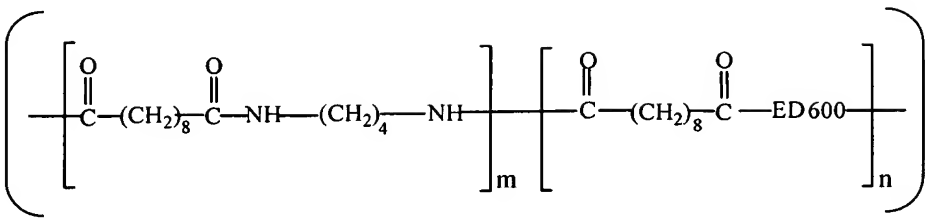

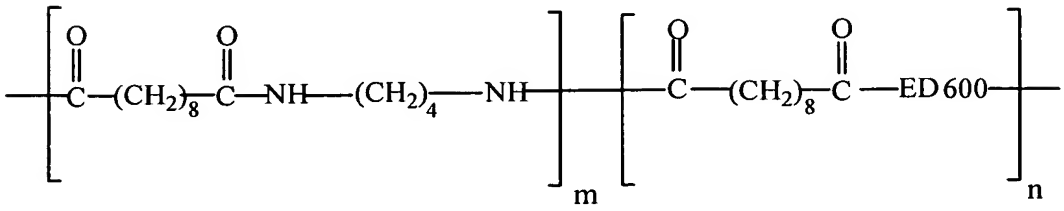

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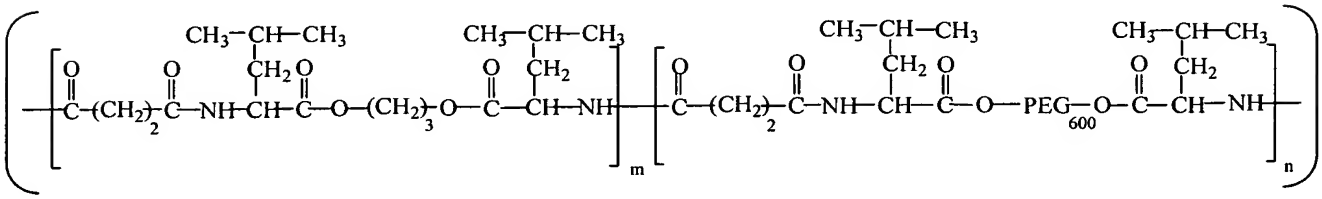
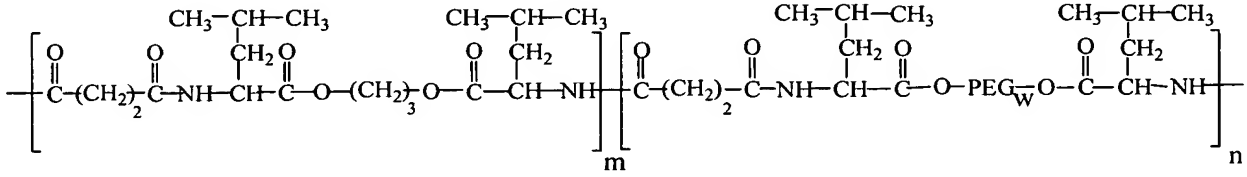
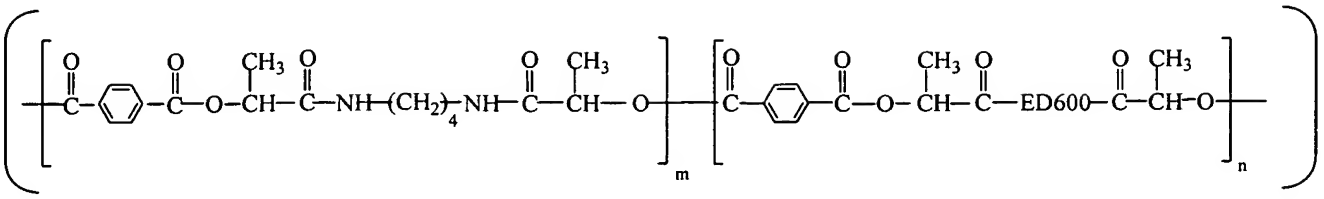
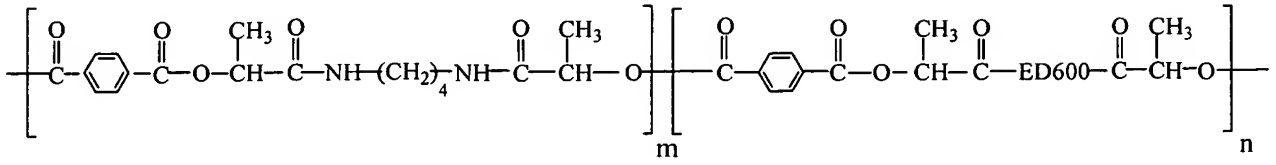




(42), and



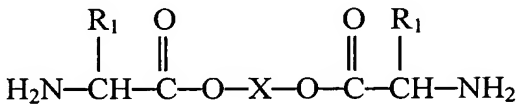


(43);

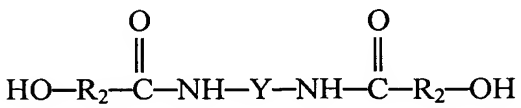
where m and n are integers, and w is a molecular weight ranging from about 100 to about 4,000 Daltons.

21. (Currently Amended) A method for fabricating a medical article~~, the method including~~ comprising synthesizing a copolymer and forming a coating based on the copolymer on at least a portion of an implantable substrate, wherein the synthesizing of the copolymer ~~including~~ comprises reacting a first reagent with a second reagent and with a third reagent, wherein:

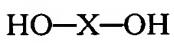
(a) the first reagent is selected from a group consisting of compounds having formulae (1), (2), (3), and (4):



(1)



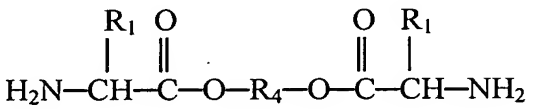
(2)

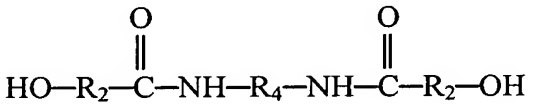


(3)

$H_2N—Y—NH_2$ (4)

(b) the second reagent is selected from a group consisting of compounds having formulae (5), (6), (7), and (8):

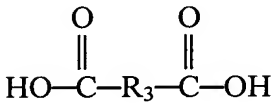

(5)


(6)

$HO—R_4—OH$ (7)

$H_2N—R_4—NH_2$ (8)

(c) the third reagent is a dicarboxylic acid having the formula (9):


(9)

wherein:

R_1 is hydrogen, methyl, *iso*-propyl, *sec*-butyl; *iso*-butyl, or benzyl group;

R_2 is methylene, methylmethylene, *n*-propylene, *iso*-propylene, ethylmethylene, *n*-butylene, *iso*-butylene, *sec*-butylene, or *n*-amylene group;

R_3 is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is an integer between 2 and 12;

R_4 is a moiety derived from a compound selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), random poly(ethylene glycol-co-propylene glycol), poly(ethylene glycol)-block-poly(propylene glycol), hyaluronic acid, poly(2-hydroxyethyl methacrylate), poly(3-hydroxypropylmethacrylamide), poly(styrene sulfonate), poly(vinyl pyrrolidone), and cellulosics;

X is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is an integer between 2 and 12;

Y is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is 1, 2, or 5.

22. (Original) The method of Claim 21, wherein the implantable substrate is a stent.

23. (Original) The method of Claim 21, wherein the molar ratio between the first reagent, the second reagent, and the third reagent is about 1:1:2.

24. (Original) The method of Claim 21, wherein the compound of formula (1) is a diol-diamine, the diol-diamine is a product of condensation of an amino acid and a diol.

25. (Original) The method of Claim 24, wherein the amino acid has the formula (10):

$H_2N—CHR_1—COOH.$ (10)

26. (Original) The method of Claim 24, wherein the amino acid is selected from a group consisting of glycine, alanine, valine, isoleucine, leucine, and phenyl alanine.

27. (Original) The method of Claim 24, wherein a diol is selected from a group consisting of ethylene glycol, 1,3-propanediol, 1,4-butane diol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, and 1,12-dodecanediol.

28. (Original) The method of Claim 21, wherein the compound of formula (2) is an amidediol, the amidediol is a product of condensation of a hydroxy acid and a diamine.

29. (Original) The method article of Claim 28, wherein the hydroxy acid has the formula (11):

$HO—R_2—COOH.$ (11)

30. (Original) The method of Claim 28, wherein the hydroxy acid is selected from a group consisting of glycolic acid, lactic acid, β-hydroxybutyric acid, α-hydroxyvaleric acid, and ε–hydroxycaproic acid.

31. (Original) The method of Claim 28, wherein the diamine is selected from a group consisting of putrescine, 1,2-ethanediamine, and cadavarene.

32. (Original) The method of Claim 21, wherein the compound of formula (3) is selected from a group consisting of ethylene glycol, 1,3-propanediol, 1,4-butane diol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, and 1,12-dodecanediol.

33. (Original) The method of Claim 21, wherein the compound of formula (4) is selected from a group consisting of putrescine, 1,2-ethanediamine, and cadavarene.

34. (Original) The method of Claim 21, wherein the compound of formula (5) is a PEG-diester-diamine conjugate, the conjugate is a product of condensation of an amino acid and poly(ethylene glycol).

35. (Original) The method of Claim 34, wherein the amino acid has the formula (10):

$H_2N—CHR_1—COOH.$ (10)

36. (Original) The method of Claim 34, wherein the amino acid is selected from a group consisting of glycine, alanine, valine, isoleucine, leucine, phenyl alanine, tyrosine, serine, and glutamic acid.

37. (Original) The method of Claim 21, wherein the compound of formula (6) is a PEG-amidediol conjugate, the conjugate is a product of condensation of a hydroxy acid and PEG-diamine.

38. (Original) The method of Claim 37, wherein the hydroxy acid has the formula (11):

$$HO—R_2—COOH. \quad (11)$$

39. (Original) The method of Claim 37, wherein the hydroxy acid is selected from a group consisting of glycolic acid, lactic acid, β-hydroxybutyric acid, α-hydroxyvaleric acid, and ε–hydroxycaproic acid.

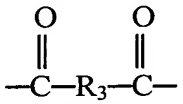
40. (Original) A method for fabricating a medical article, the method including synthesizing a copolymer and forming a coating based on the copolymer on at least a portion of an implantable substrate, wherein the copolymer has a general formula (12) or (13):

$$—[M—P]_m—[M—Q]_n— \quad (12)$$

$$—[M_1—P]_p— \quad (13)$$

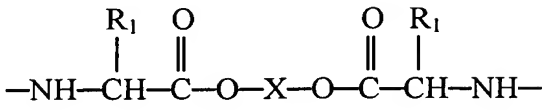
wherein:

M is a moiety represented by the structure having the formula (14)

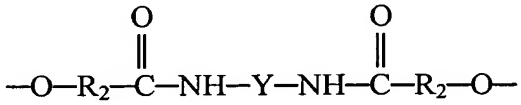


(14)

P is a moiety selected from a group consisting of structures having the formulae (15), (16), (17), and (18):



(15)



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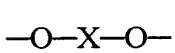

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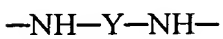
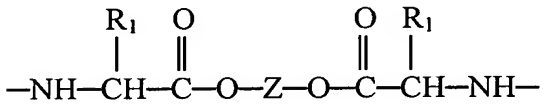


(18)

Q is a moiety selected from a group consisting of structures having the formulae (19), (20), and (21)



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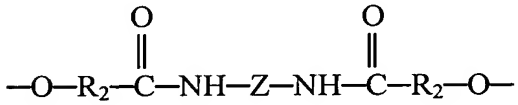

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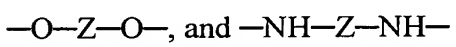
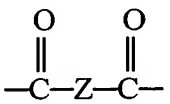


(21)

M_1 is a moiety represented by the structure having the formula (22):



(22)

R_1 is hydrogen, methyl, *iso*-propyl, *sec*-butyl; *iso*-butyl, or benzyl group;

R_2 is methylene, methylmethylene, *n*-propylene, *iso*-propylene, ethylmethylene, *n*-butylene, *iso*-butylene, *sec*-butylene, or *n*-amylene group;

R_3 is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is an integer between 2 and 12;

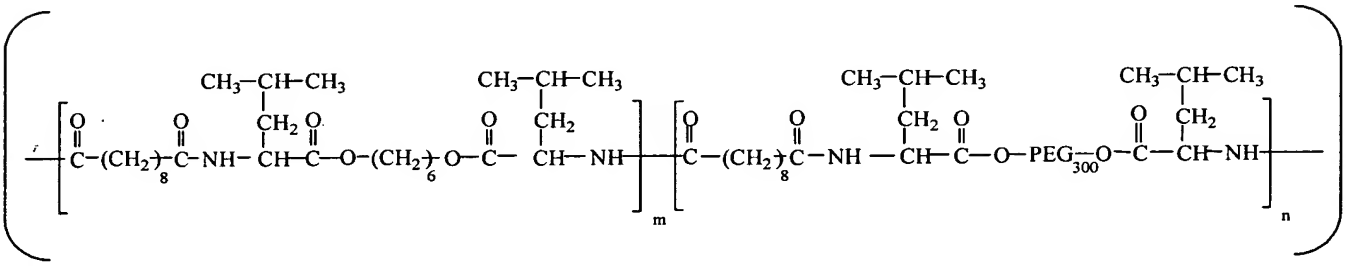
X is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is an integer between 2 and 12;

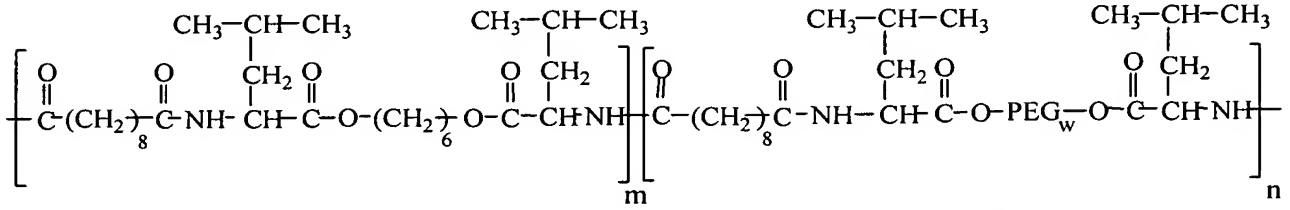
Y is a straight chained or branched aliphatic alkylene group C_nH_{2n}, wherein n is 1, 2, or 5; and

Z is a moiety derived from a compound selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), random poly(ethylene glycol-co-propylene glycol), poly(ethylene glycol)-block-poly(propylene glycol), hyaluronic acid, poly(2-hydroxyethyl methacrylate), poly(3-hydroxypropylmethacrylamide), poly(styrene sulfonate), poly(vinyl pyrrolidone, and cellulosics; and

m, n, and p are integers where the value of m is between 5 and 1,800, the value of n is between 1 and 800 and the value of p is between 4 and 1,500.

41. (Currently amended) The method of Claim 40, wherein the copolymer is selected from a group consisting of copolymers of formulae (23), (24), (25), (26), (27), (28), (29), (30), (31), (32), (33), (34), (35), (36), (37), (38), (39), (40), (41), (42), and (43):





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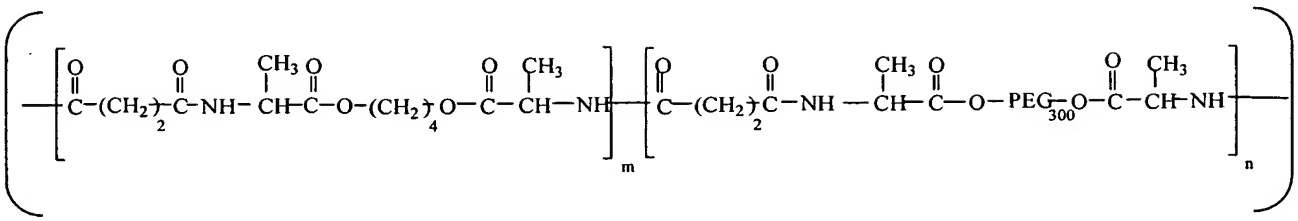

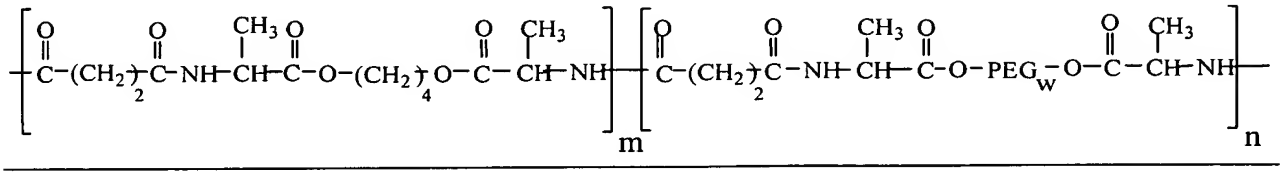

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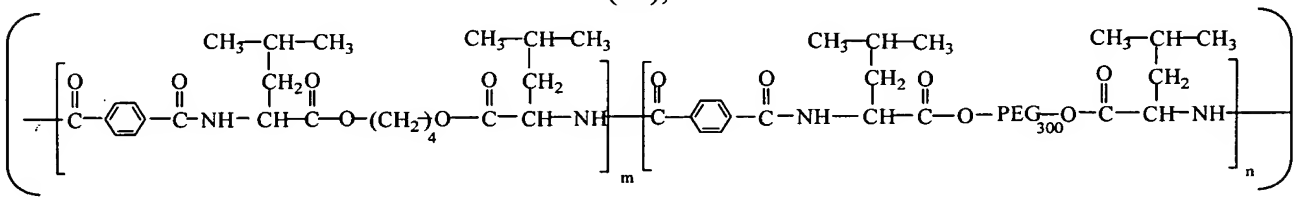

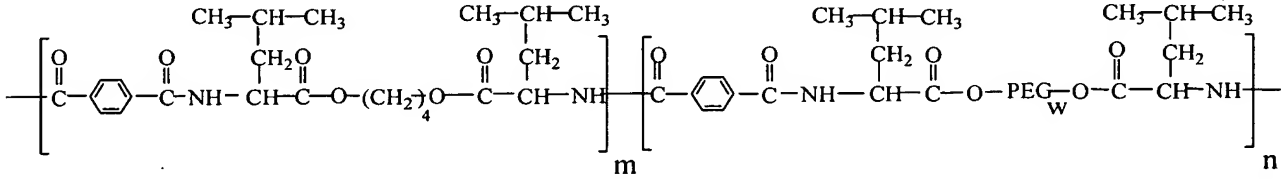

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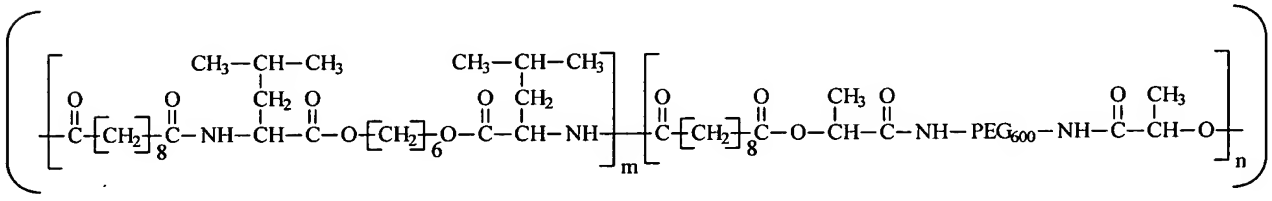

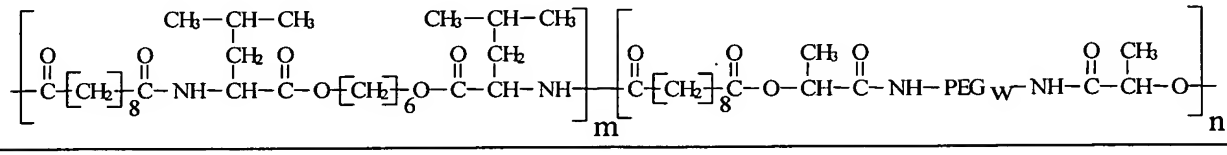

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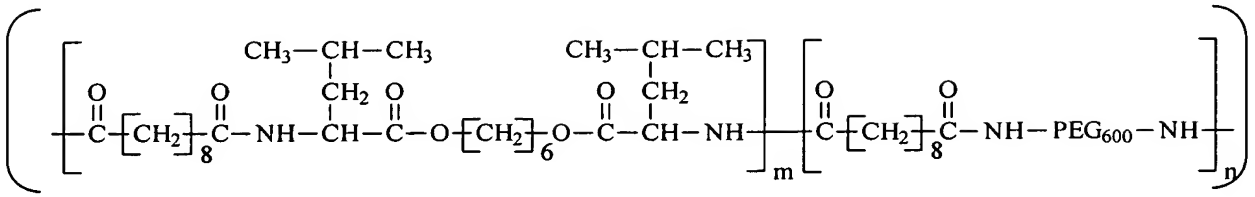

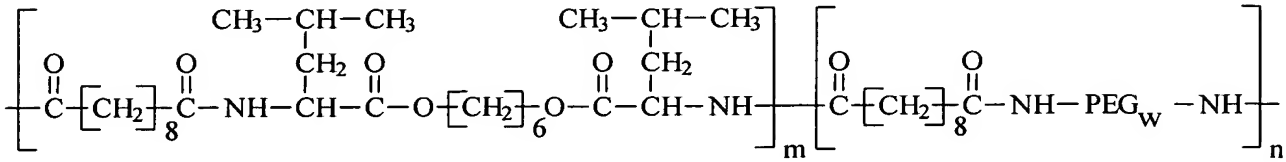

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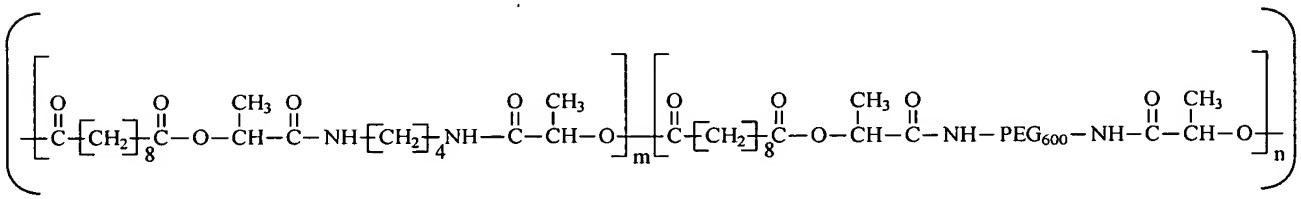

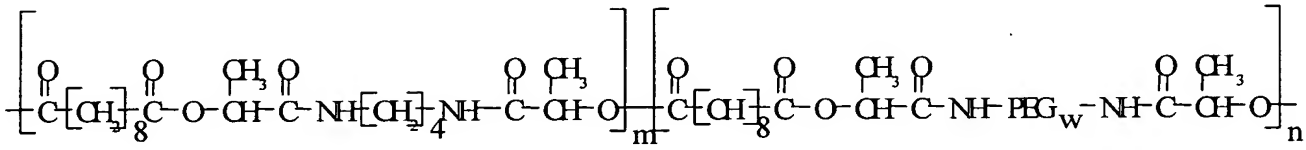

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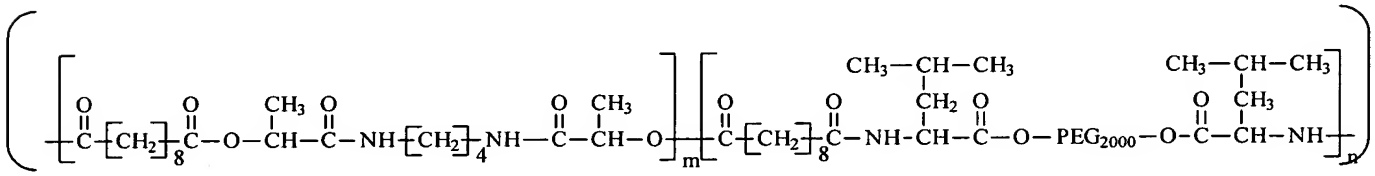

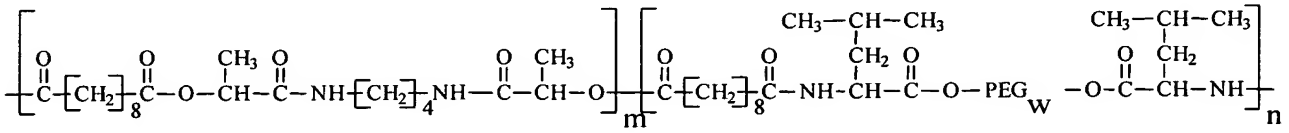

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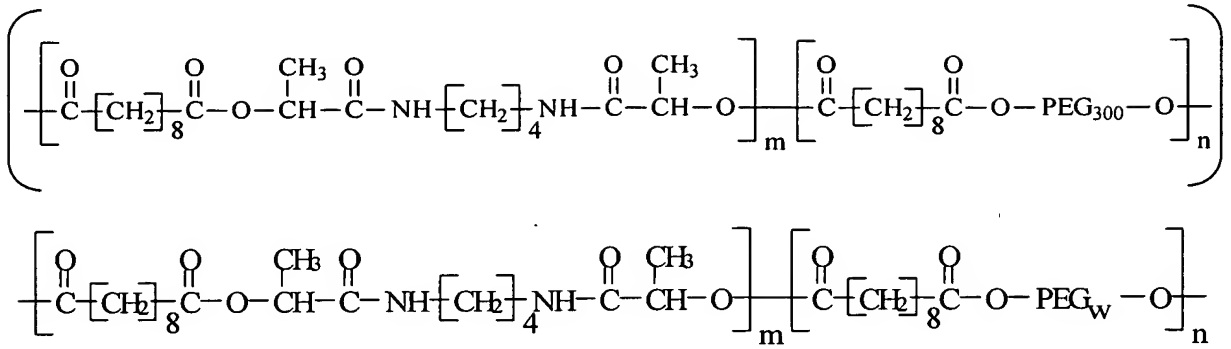

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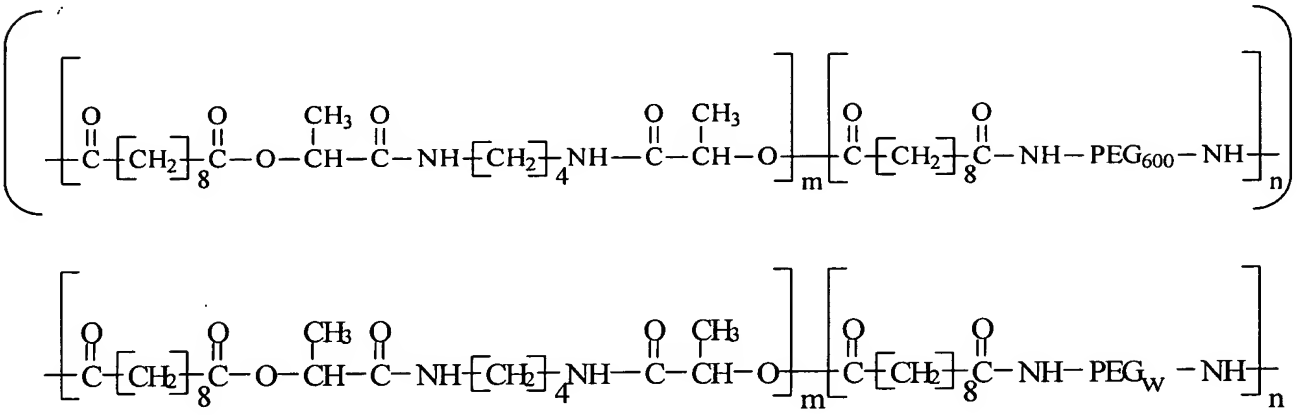

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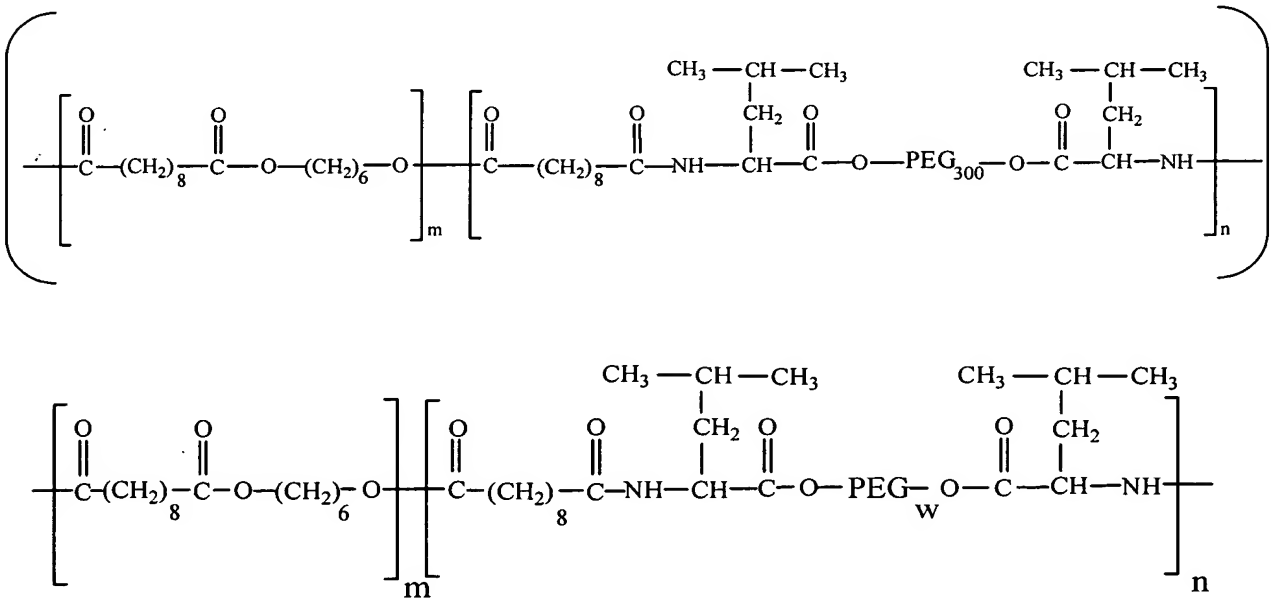

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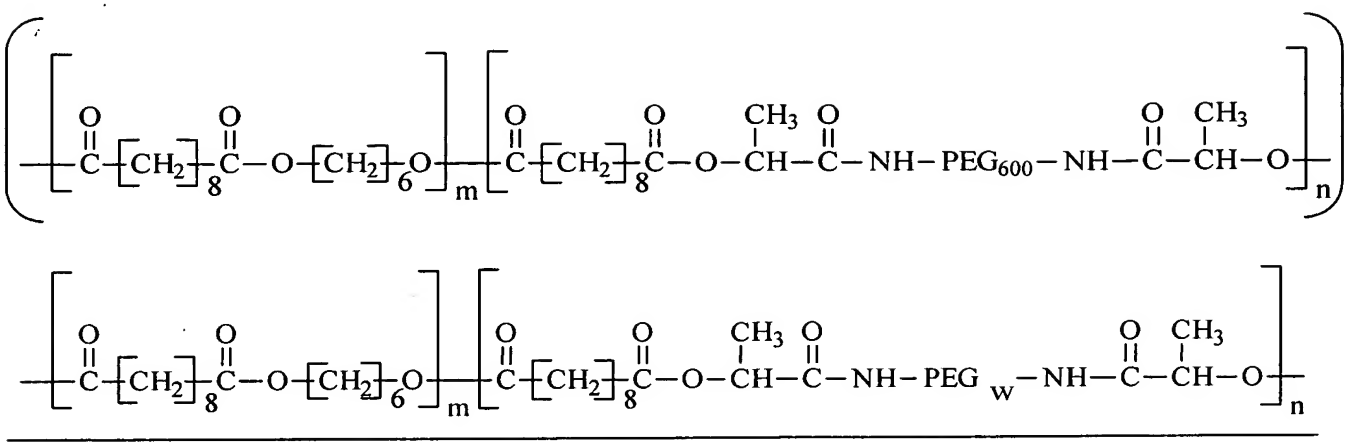

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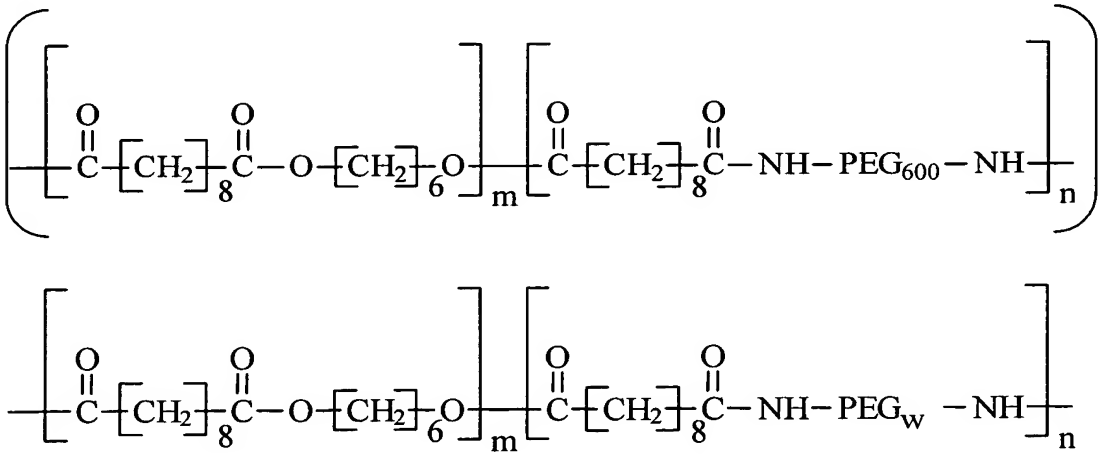

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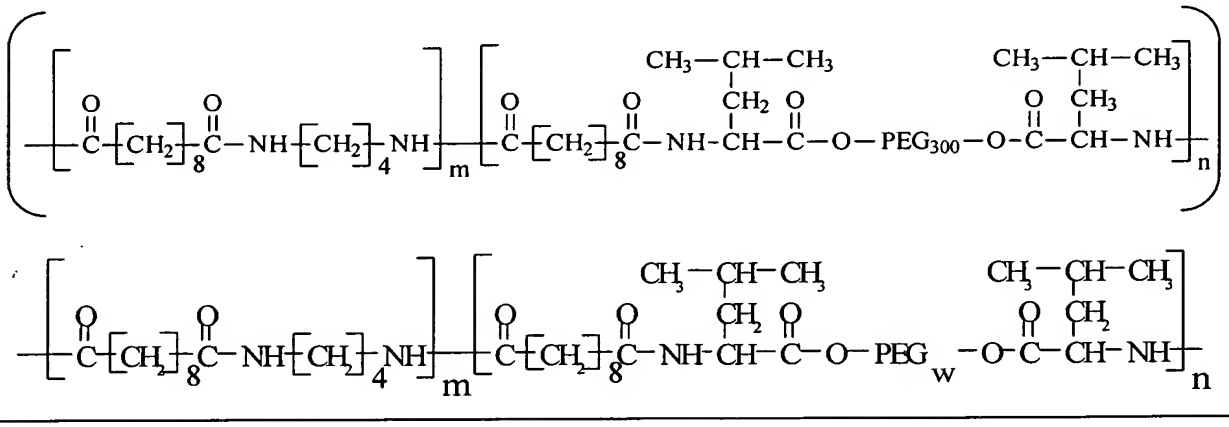

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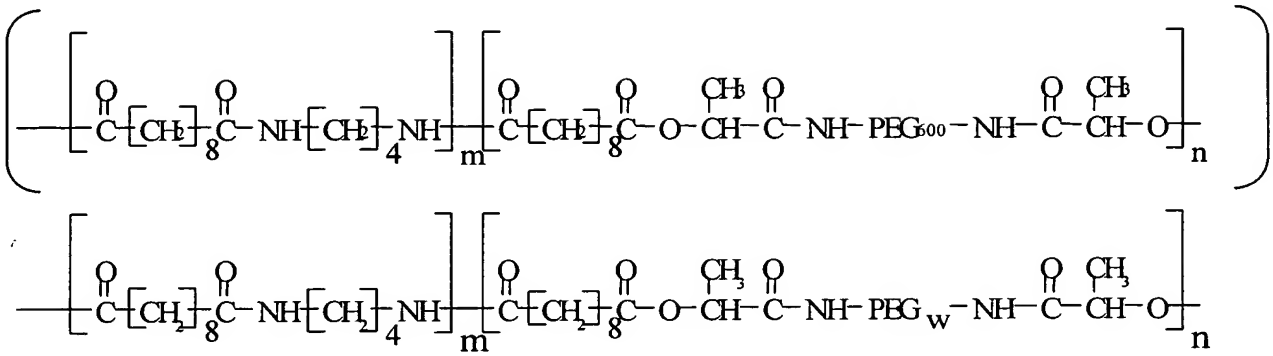

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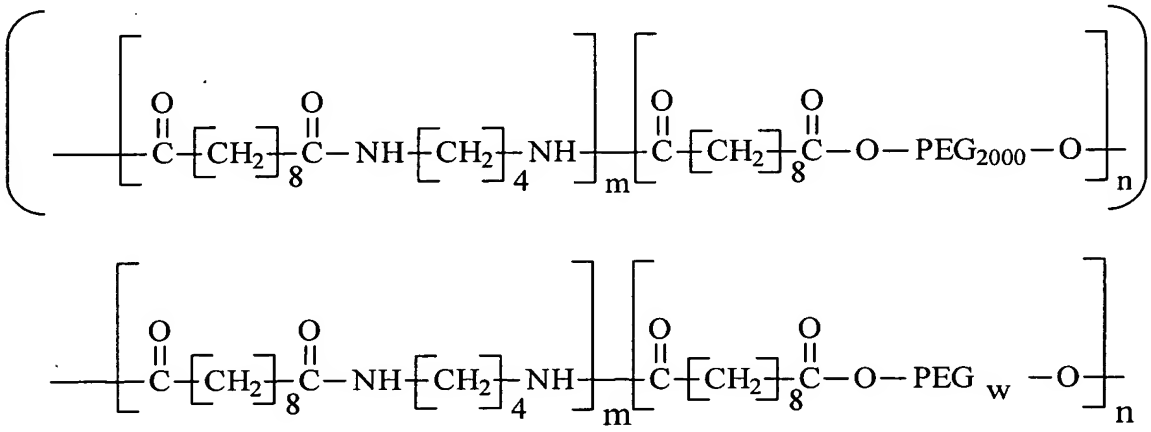

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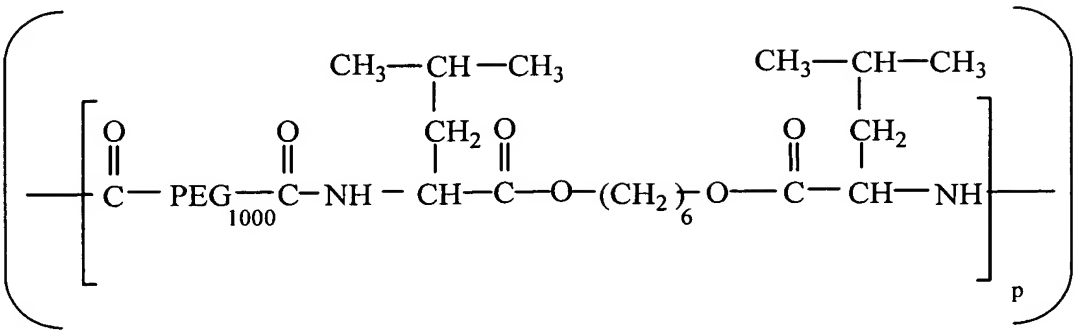

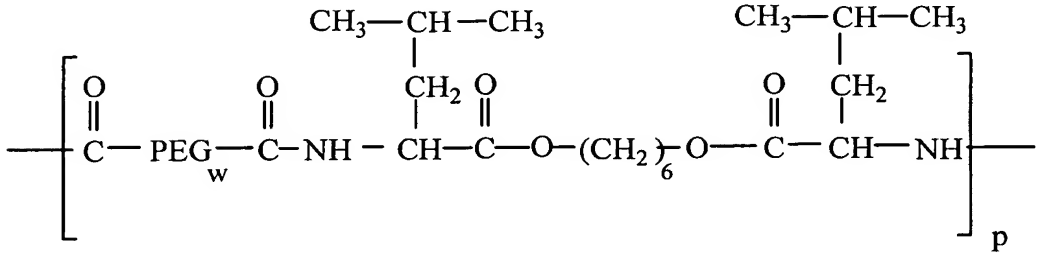

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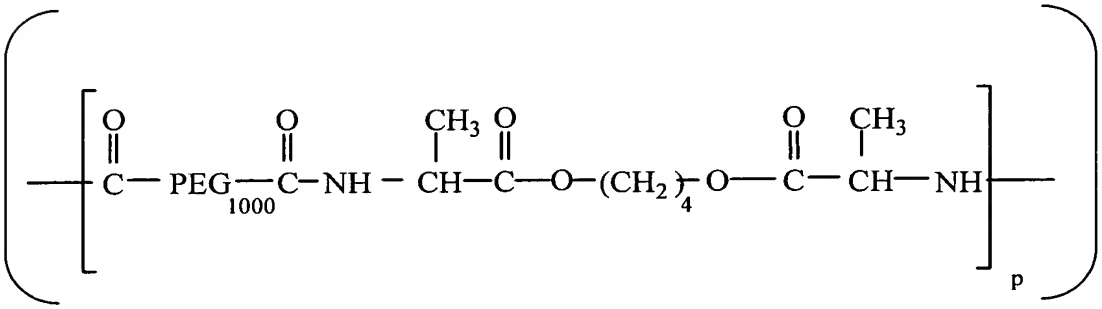

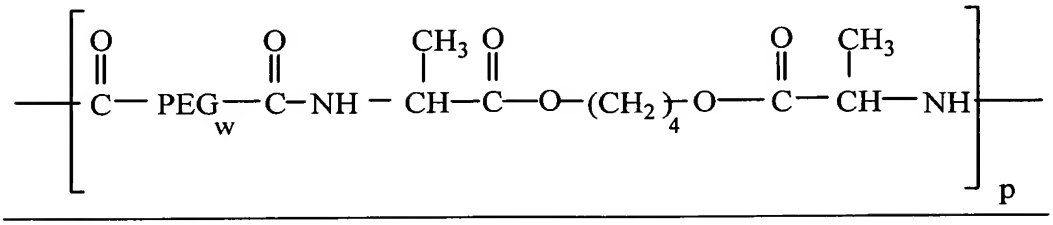

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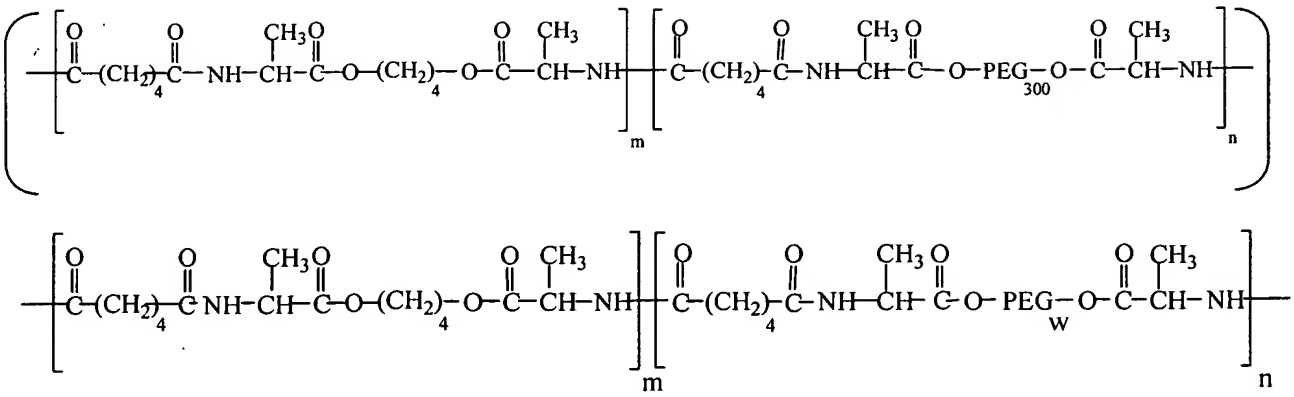

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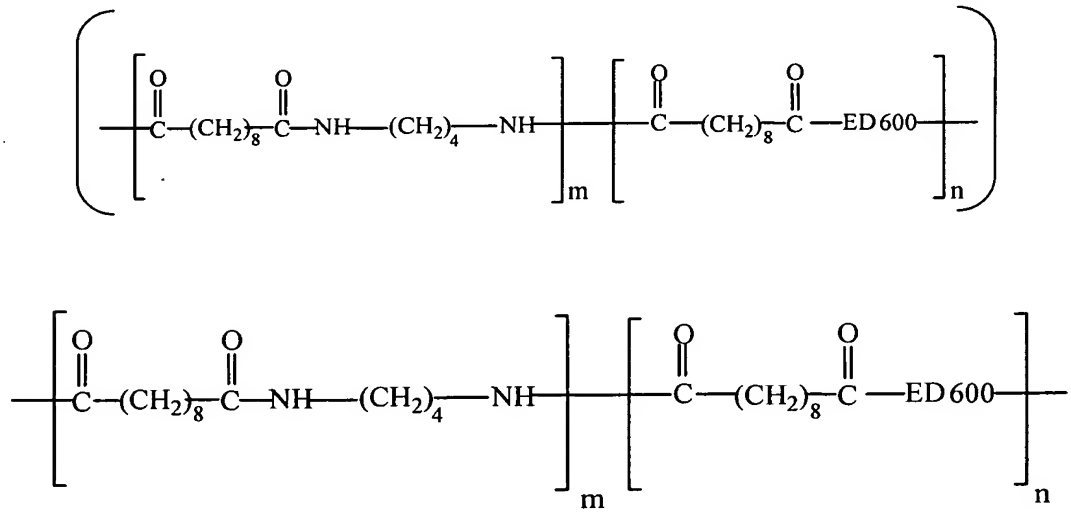

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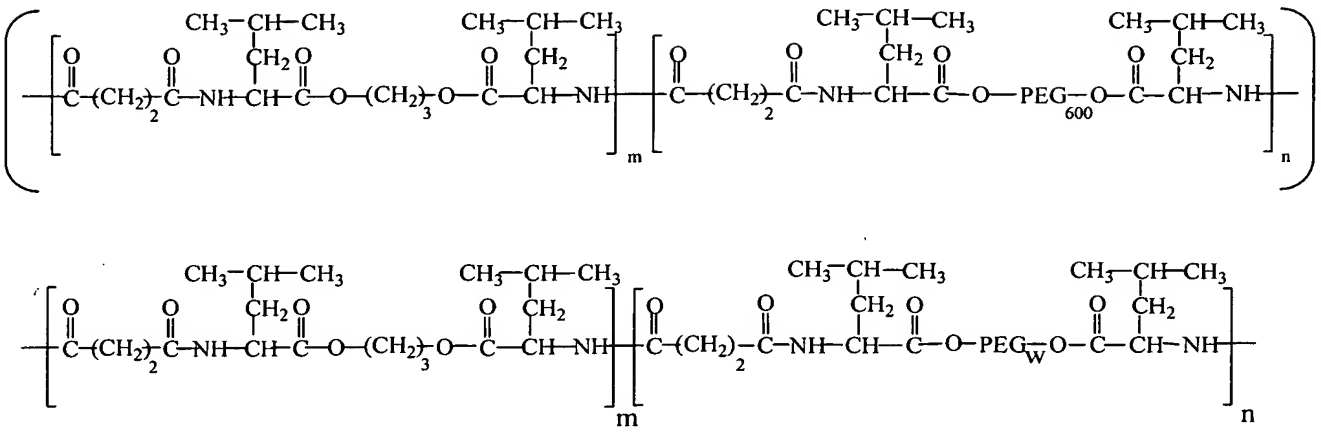
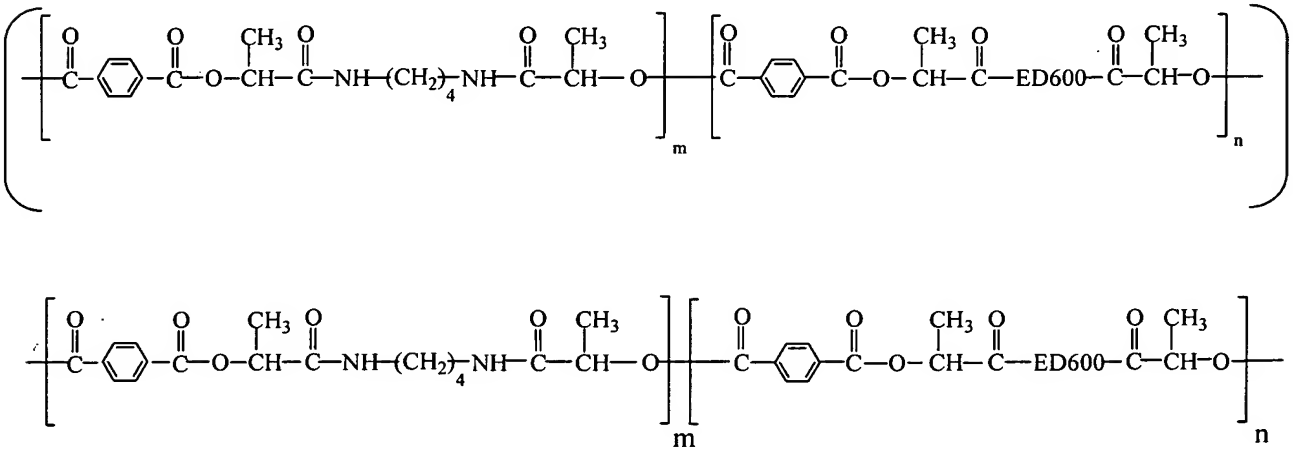


(42), and



(43);

where m and n are integers, and w is a molecular weight ranging from about 100 to about 4,000 Daltons.